

Abstract

Disclosed is a method and apparatus for optically modulating and transmitting source data. An
5 optical comb comprising optical tones having a frequency spacing equal to Δf is generated by an
optical comb generator. Selected ones of the optical tones in the optical comb are modulated
according to the source data to produce a comb of modulated optical tones. At least one optical
tone in the optical comb is frequency shifted by a frequency less than Δf to produce a frequency
shifted unmodulated optical reference tone. The optical comb, the frequency shifted unmodulated
10 optical reference tone and the comb of modulated tones are multiplexed onto at least one optical
path.